

THE
ANNUAL ADDRESS
DELIVERED, THE SECOND OF OCTOBER, 1837, ON OPENING THE SESSION
OF
THE ROYAL SCHOOL
OF
MEDICINE AND SURGERY,
PINE STREET.

“In this department of knowledge there are fields of investigation yet unexplored, rich in fact and theory, and the subject is one equally fitted for the exertion of the memory, the reason and the imagination.”

Sir H. Davy.

BY
JOHN DAVIES,
MEMBER OF THE COUNCIL OF THE LITERARY AND PHILOSOPHICAL SOCIETY OF MANCHESTER,
&c. &c. AND LECTURER ON CHEMISTRY, &c.

MANCHESTER:
LOVE AND BARTON, MARKET-STREET; LONGMAN AND CO., HAMILTON
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TO THE
STUDENTS OF THE MANCHESTER ROYAL SCHOOL
OF
MEDICINE AND SURGERY.

GENTLEMEN,

FOR your use, and without any view to ultimate publication, this Address was originally prepared.

By you it was received in the most gratifying manner; and as you have since solicited the publication of it in a way which has not occasioned any hesitation on the part of my Colleagues, nor left to me a pretext for refusal, I cannot, I think, better accede to your courteous request than by inscribing it, respectfully, to you.

It is printed in its original form; and the apparent additions are merely the passages which, in order that I might not trespass too much on your time and attention, were omitted when it was being delivered.

I am, Gentlemen,

Your sincere Friend,

JOHN DAVIES

Pine Street, October, 1837.



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ANNUAL ADDRESS, &c.

GENTLEMEN,

It was not, I assure you, without great hesitation and greater diffidence, that I was induced to accede to the wishes of my more competent colleagues to prepare and deliver the annual address at the commencement of the ensuing session.

Whatever may be the errors in statement, or defects of expression, in the observations which I shall submit to you, I alone must be considered as responsible.

The task which I have undertaken is the more difficult since the general view of medical studies, and the relative position and claims of lecturers and students were so well illustrated, at the opening of the last session, by one who, when he ceased to feel pain, imparted it, by his death, to others. The departure of such a man cannot but be felt by every society in which he mingled, as a melancholy privation. While his virtues, his acquirements, and his talents, live only in remembrance, we may be permitted to lament that the rising generation, and this school in particular, were bereft of them when they were in their full vigour and most productive operation. But our days are numbered on a record to which we have no access ; nor was it permitted even to an inspired writer, not-

withstanding his emphatic entreaty, to “be certified how long he had to live.” Our late distinguished and respected friend, Mr. John Atkinson Ransome, who could so ably sooth the sorrows, assuage the sufferings, and, as far as medical agency has the power, prolong the lives of others, was himself obliged to yield to our common destiny when his various qualities were in the season of their ripeness. As that final eclipse has been so recent, and as it is connected with associations which must be, at this time and in this place, so affecting, it is painful to reflect even upon his merits, and to recal to recollection the talents which enlightened and the virtues which adorned his career.

Mr. Ransome ever manifested the most devoted attachment to this school. His last lingering efforts were bestowed upon it. When wasting disease had worn away his system, he still appeared to be revived, and to acquire new energies, the moment that he approached this lecture table. In his last interview with one of his colleagues, a short time before he expired, he expressed the most fervent good wishes for the prosperity of the establishment. Urbanity, benevolence, courtesy, were his principal characteristics. The interest which he felt in the success of the students was honourably reciprocated. They sent to the family their spontaneous and affectionate tribute of condolence ; and when the remains of their beloved preceptor were conveyed to the grave, upwards of sixty of them, manifesting every indication of respectful sorrow, joined the lecturers in the public procession. Such a teacher, and such pupils were worthy of each other.

Medicine, and the various sciences with which it is connected, depend upon the nature and laws of matter. Of the nature of matter we know nothing more than what is dimly and vaguely seen in the investigation of the properties which observation and experiment have developed. Our knowledge on this subject is, therefore, not only very limited, but very obscure. The general opinion, is that which appears to have been first taught in the atomic schools of Greece. According to this doctrine, matter of every kind, and in every state, consists of minute spherical particles, which are hard and incapable of destruction or of alteration. The doctrine is merely speculative. It serves, however, to explain, very plausibly, almost all phenomena. When I have to treat of the laws of affinity in the course of chemistry, I shall be enabled to explain the various opinions on this subject and to produce the evidence by which they are respectively countenanced.

But how imperfect soever may be our notions as to the nature of matter, we are acquainted with many of the laws to which it is subjected, and by the operation of which is preserved, under a great diversity of circumstances, the regularity and harmony of the creation.

Now the arrangement and action of matter, under various modifying causes, comprehend those branches of study requisite to form the enlightened physician. A due acquaintance with these departments of human knowledge, though some of them may, at first, appear to be only collateral or remotely allied to medical pursuits, constitute, in fact, the prin-

cipal difference between the well-educated medical man, who is one of the greatest blessings to a community, and the ignorant and mischievous quack, who may be compared to the grub which disease engenders for its increase and propagation. "The science of medicine," as Lord Bacon justly observes, "if it be destitute and forsaken by natural philosophy, is not much better than an empirical practice."

The preliminary studies of medical men, before they enter upon their profession, are, in a majority of cases, most grossly neglected.

The fundamental science of computation, is, in a number of its departments, highly worthy of consideration. It is the very basis of every branch of natural philosophy. In chemistry the construction and use of Mathematical formulæ are of decided importance, and of very general application. Even the higher geometry has been brought to bear upon considerations connected with the atomic philosophy. In mineralogy, in geology and in other collateral departments, mathematics, if not absolutely indispensable, are very important. Heat, optics, electricity, have derived great, and may be expected to derive yet greater aid from abstract science. In the determination of the specific gravity of bodies, and in that of the atomic numbers, decimal arithmetic is absolutely indispensable.

But useful as are the mathematics in their applications to some considerations referring to every branch of your profession, they are still, perhaps, of more value as a discipline of the mind. Mr. Locke recommends the study not so much to form mathe-

maticians as reasonable creatures. The gradual progress from self-evident principles, by a connected series of inferences to remote conclusions, teaches the student how to think and to reason. The study of this science superinduces habits of attention. It invigorates the intellect. It awakens and cultivates mental energy. It excites and regulates a tendency to investigation. It teaches us how to form from isolated facts systematical theories. It leads to the discovery of

“ The mystic laws from whose high energy
The moving atoms, in eternal change,
Still rise to animation,”—DAVY.

Almost every writer and lecturer on the human body has justly characterized it as a beautiful and perfect combination of mechanical powers. Why, then, is not the science of mechanics directed to be studied? In the motion of the bones by the action of the muscles, we see the properties of the lever illustrated. In the movements of the eye the pulley is brought, strikingly, into action. The universal joint seems to have been originally borrowed from the animal system. The composition and decomposition of forces are of almost universal occurrence. The centre of gravity and its operations are involved in some of the most interesting inquiries in physiology. Without a knowledge of these principles the student cannot perceive the cause and nature of the effects which he witnesses.

Let me offer you another example. The bones are made hollow instead of solid. The same construction is observed in quills, and in the stalk which sup-

ports the ear of corn. The increased strength by this arrangement of the quantity of matter employed may be mathematically demonstrated, and rendered subject to computation on mechanical principles. It is an admirable provision of nature to impart the greatest firmness with the least expenditure of materials ; and strikingly exemplifies an anticipation of the results of scientific investigation.

Some acquaintance with acoustics is necessary to explain, in a satisfactory manner, the organs which produce sound, and those which enable us to estimate its modifications. This study is, therefore, worthy of the particular attention of the physiologist. The structure of the mouth and that of the ear furnish some of the finest illustrations of this part of philosophy.

On the properties of sound much of our happiness and instruction certainly depends. They enable us to receive knowledge and to impart it. The charms of music, and the delights of conversation, which have so great an influence over the feelings and the character, are comprehended in the science of acoustics ; and, while the organs of the body serve to exemplify and confirm the principles, there cannot be, in this case, any apprehension of “dulling delight by exploring its cause.”

The science of optics must be duly appreciated by every one who considers the structure and purposes of the eye. The various textures of the different coats by which that organ is covered ; the lenses and humours which it contains to refract light ; the nature of the fluid by which it is lubricated ; the application of spectacles to improve the sight imperfect by mal-

formation or impaired by age ; the expedients to be resorted to in cases of disease, and a number of other particulars might be cited to shew the importance of an acquaintance with this subject to the medical practitioner. Sight is, perhaps, the most delightful and instructive of our faculties. The loss of it is one of the most grievous visitations which can afflict humanity. Milton mourned over this privation in all the eloquence which the agony of personal feeling could, in its utmost bitterness, inspire ; and Lord Byron has, in his poem on Darkness, impressively remarked that, if “ the icy earth swung blind and blackening in the moonless air,” “ all hearts,” would then be “ chilled into a selfish prayer for light.”

The pressure and motion of fluids, or the doctrines of hydrostatics and hydrodynamics have a close relation to physiological pursuits. The transfer of fluids through tubes of different dimensions is connected with enquiries concerning the circulation of the blood. An attempt was made, a few years ago, to supply on these principles the residuary phenomena in the popular explanation of the generation of animal heat : to several medical gentlemen to whom it was mentioned it appeared to be perfectly novel ; and it might have been ushered into the world with such pretensions had not my enlightened friend Dr. Fleming pointed out a similar suggestion in the neglected writings of the illustrious Haller.

Pneumatics, or that science which treats of the physical properties of aeriform matter, is another branch of study with which the medical practitioner ought to be acquainted. It explains the operation of

cupping; the mode by which the infant derives its earliest sustenance; the changes of bulk in gases; the support of the mercury in the barometer and its difference of elevation at different times; the levity of ascending bodies; the rise and descent of fish in the water; the causes of wind and other atmospheric excitements; the mode of facilitating congelation and obtaining crystals under peculiar circumstances; the contrivance of nature to enable certain animals, such as the lizard, to walk up a perpendicular wall; the motions of the diaphragm, and a number of other facts, interesting to a great degree, in their connection, with some departments of medical pursuits.

It is, I presume, hardly necessary for me to allude to electricity, as a valuable preparatory study to a person designed for the medical profession. Electricity, under its modified appearances as galvanism, magnetism, and electro-magnetism, has long excited the attention of the medical investigator; and it promises, certainly, to throw, in the progress of discovery, much light over many interesting phenomena, and to become ultimately subservient to important applications. The experiments of Crosse, have even when stripped of all their exaggerations, presented some very wonderful results, as well as led, very naturally, to glowing anticipations. On some of the views which they have suggested it would "be unwise to be sanguine, and unphilosophical to despair."

The art of drawing is, occasionally, very useful to the medical student, and, still more so, to the lecturer and demonstrator. This is a department of

education to which the French, in particular, have assigned a high place in preparatory acquirements.

Classical learning is, in reference to every liberal pursuit, highly estimated. The student who determines to follow, in the course of his medical career, the science through its progressive advances, ought to be able to peruse with facility the French and German publications. From the continent a number of the most important of recent discoveries have emanated. He has thus the opportunity of applying them at once, without waiting for them to appear from the tardy and often imperfect second hand source of a translation.

Another preliminary study of the highest importance has, in your profession, been, generally, very much neglected. I allude to the art of composition. A number of individuals of distinguished attainments, and high classical learning, have imparted very useful information in a very imperfect style. In this point of view they have appeared to great disadvantage. A perspicuous expression ought to be acquired early; and then the power becomes gradually cultivated in its subservience to professional study. "John Hunter used to dwell, we are told, on the advantage which is gained in regard to clearness of conception by the committing of one's ideas to writing, comparing the process to the taking of stock by a tradesman without which he cannot know with certainty either what he has or what he wants." And Lord Bacon, who frequently refers to the subject, has justly observed that "the powers of memory without the help of writing, can do little towards the advancement of any useful

the monuments of wit and learning are more durable than the monuments of power, or of the hands. For have not the verses of Homer, continued twenty-five hundred years, or more, without the loss of a syllable or letter ; during which time, infinite palaces, temples, castles, cities, have been decayed and demolished ? It is not possible to have the true pictures or statues of Cyrus, Alexander, Cæsar ; no, nor of the kings or great personages of much later years ; for the originals cannot last, and the copies cannot but lose of the life and truth. But the images of men's wits and knowledges remain in books, exempted from the wrong of time, and capable of perpetual renovation. Neither can they fitly be called images, because they generate still, and cast their seeds in the minds of others, provoking and causing infinite actions and opinions in succeeding ages." Bacon was himself a splendid illustration of this impressive and eloquent statement.

I have dwelt the longer on this topic, because it has not, I think, been duly appreciated. I have introduced the opinions of very eminent writers ; because I have been willing to enforce, by their authority, advice which might not have been sufficiently regarded had it rested on my own. The retrospect of your studies will, I am convinced, depend much, at a future time, in the gratification or regret which it excites, upon your attention or neglect with reference to this department of your education. With respect to preliminary studies Professor Thomson, Mr. Quain and others among the most eminent of the London teachers of medicine complain that the student is generally not sufficiently prepared, as to his progress

in education, before he enters on his professional pursuits. We find similar sentiments expressed at a very early period. "Philosophy," says Hippocrates, "ought not to be neglected in the study of medicine, nor medicine in the study of philosophy."

The rapidity of a student's progress depends not only on his talents and industry, but on a proper system of applying them effectively. Nothing is, perhaps, more useful than to form a short abridgment of the most important works. This was the practice of Locke, of Burke, of the late Dr. Henry. "To read without a pen in your hand" says a high authority in your own profession "is only to dream."—The practice certainly awakens the attention; gives a clear conception of the meaning of the author; strengthens the memory; and supplies very convenient sources of reference on the most important topics. But among students of equal ability and attainments, one pursuing the ordinary method and the other committing to paper the result of his reading and observations, we should, I am sure, find, in the lapse of even one session, a great disparity in respect to intelligence.

On the origin and history of Medical Science it will not be necessary for me to expatiate. The subject will be treated in detail by some of my colleagues. I may, however, offer a few remarks.

Like almost every other art it appears to have arisen out of the wants and sufferings of humanity. Hence it must have been almost coeval with the first existence of man. Accident would betray the medicinal properties of certain herbs; and remembered observation lead to their application. Knowledge would thus

gradually accumulate, and be transmitted, with fresh additions, through successive generations. Empirical facts must, in every branch of human knowledge, precede, as data, scientific research and the evolution of general principles. This must, undoubtedly, have been the case in medicine. The materials must have been collected before any attempt could be made, by their union and arrangement, to construct the edifice.

The early history of every country is marked by superstition. Much is referred to chance or supernatural agency. The Jews, the Babylonians and the Assyrians publicly exposed their sick and afflicted to receive the casual advice of any passing stranger. Unable to afford assistance themselves they thus trusted to a particular Providence. This practice still prevails among eastern nations. In some parts of India the priests monopolize the practice of physic and render the heart subservient to the promulgation of superstition and the aggrandizement of their own authority ; while in China, where the abuse of a conservative system arrests the progress of investigation and improvement, the whole practice of the medical man is reduced to a sort of code, from the routine of which there can be no deviation without incurring on detection, the severest punishment. The sagacity of one of the Emperors, however, suggested to him a plan which some persons have thought would not be unworthy of the adoption of European sovereigns. While his Majesty was in good health, his medical attendants were well paid ; but the moment that he became indisposed, and until he perfectly recovered, their salaries were suspended and their reputations in danger ! Thus the interests

of the royal patient concurred with those of the medical advisers : a coincidence which some cynical persons have presumed to insinuate does not in every country universally obtain in the modern practice of the art.

Among the ancients Esculapius and Hippocrates were the most eminent. The latter, in particular, was a most extraordinary person, endued with the genuine spirit of a true philosopher. He may, indeed, be regarded as the founder of the art ; having opened the sources of practical knowledge and scientific investigation ; and, by the exercise of a gigantic intellect, laid down, by anticipation, principles which it required the experience of future ages to establish. But it is the privilege of exalted genius to carry its views, by a sort of instinctive sagacity, beyond the boundaries within which ordinary minds are confined.

To the Dogmatic School of Greece, and the Methodic, Pneumatic and electric sects in Rome, I shall merely allude. They diffused the study, while by adhering to a mere routine, they arrested, in some respects, its progress.

Galen was one of those rare human beings who sometimes appear at distant periods to astonish and enlighten the world. With great vigour of intellect, and an indefatigable spirit of enterprise and research, he united the talent for systematical arrangement. He reduced to order the chaotic and scattered knowledge which he found and augmented.

The impress of his genius can never be obliterated from medical science. His authority, however, checked the career of the art, and kept, for about

one thousand four hundred years, the tendency for improvement under complete and servile subjection. No man ever inspired in his followers more reverential deference or produced more implicit obedience by his mental superiority.

Paracelsus was the first who, like Moses, led the medical practitioner out of the house of bondage. He possessed great powers of mind, and an ardent contempt for authority. His movements resembled those of a meteor, splendid but erratic. His fame would, no doubt, have been higher, had it not been impaired by the depravity of his life, and the audacity of his pretensions. It is, however, but justice to say of him, that he reanimated the spirit of enquiry, and enabled medicine to participate, once more, in the freedom of other philosophical pursuits.

Van Helmont pursued a similar career with greater discretion but with less success ; and he enveloped much of his knowledge in the popular mysticism of charms and spells ; but he was, himself, an experimental investigator, and he has left permanent traces of his genius in several departments of science.

Medical knowledge has, since the period to which I referred, gradually progressed. Sydenham, "the English Hippocrates," Boerhaave and Haller made important contributions to medical science. A succession of illustrious names irradiate the pages of the history of medicine. They must ever excite admiration and gratitude. They constitute worthy objects of emulation. They have shewn, what is now very generally admitted, that medical science may receive great advantage from the study of collateral branches

of knowledge. This country has, perhaps, derived its greatest glory, in reference to your profession, from the labours of John Hunter. He must continue to be regarded as one of the greatest ornaments and benefactors of the human race. Destitute of the advantages of an early education ; occupied, to an advanced age, in a manual employment, he yet rose by the vigour of his mind, to the head of one of the most difficult and important professions. He not only improved his favourite science, but shewed how it might best be studied : the collection which he made for his own use, and left for that of others, was immense and invaluable : and he, who had to win his way through a thousand impediments, and who “shone like sunrise from the dark,” became, by his ardour, determination and success, the founder of a school of medical physiology.

To other great names I will not detain you by referring : but I may observe that while Britain is justly proud of her Lights of Science she ought to pay a merited tribute to the illustrious rivals of the continent ; who, while they have ably shared in the labour of raising the structure of medical science, will participate, in the judgment of posterity, in the glory of the achievement. I am sure you will agree with me in wishing, that the generous emulation, and friendly feelings which have hitherto subsisted between these rivals, may be happily perpetuated.

It might be expected that I should notice some of these eminent practitioners who have, by their enterprize and distinction, thrown a lustre over my native town. But I feel incompetent to apportion

their claims, or to do justice to their merits ; and I leave, therefore, to others the task of recording their success or of paying a tribute of respect to the energy and talents which produced it. I may, however, be permitted to remark, that the two individuals who will, undoubtedly, receive, from their peculiar position, the highest consideration of posterity, must be Mr. Jordan and Mr. Turner : the former was the first to have, in 1821, his Lectures acknowledged as equivalent, for examination, to those delivered in London ; and the latter originated in 1824, notwithstanding every obstruction and difficulty, the first complete medical school which has ever existed in the provinces. In this school I have now the honour of addressing you ; and I am happy to be enabled to add, that the two distinguished townsmen whom I have named will co-operate to increase its utility and reputation. Its distinguished success has been highly gratifying. It never has “ stooped to conquer.” Sparing no laudable means to facilitate the progress of the student, it has been rewarded by a very large proportion of public confidence and patronage. To retain the honourable position which it has enjoyed has been a principal object of its ambition. I can assure you, in the name of my colleagues and myself, that no exertions will be wanting, on our parts, to augment its efficiency in each successive session.

The benefit resulting from provincial schools can hardly be too favourably estimated. They save about two years of time in professional education ; and they admit of a most advantageous employment during the period of apprenticeship. They afford also all the

comforts of domestic society, and all the advantages of parental superintendance. A young man exposed to the temptations of the metropolis is, when left to his own guidance, placed, certainly, in a very perilous predicament ; and the dawn of early promise, of the highest order, has often been overshadowed, and the greatest mental energies extinguished, by allurements which have rendered the finest endowments only the instruments of moral degradation and ultimate ruin. An early residence in London has often been like the blight that affects the opening bud, which, though it holds out a promise of reward for its cultivation, withers and decays before it attains the state of its wanted maturity.—The students from this school have, in some instances, been eminently distinguished in that resort of professional eminence. One of them, for example, was, a short time ago, appointed as an instructor to fill a very responsible situation in King's College.

The facilities for professional acquirements are, in Manchester, superior, in some respects, to what they are in London. In Manchester the student has not only the advantage of seeing much practice of a very varied and important character ; of much, indeed, which the metropolis rarely presents ; but, as an operator, in the capacity of what is technically designated as a dresser, he has the valuable opportunity of cultivating, under a well-regulated discipline, surgical skill in the exercise of manual dexterity.—And the court of examiners have unequivocally stated, that no class of pupils, presenting themselves for examination, are better prepared than those educated in Manchester.

So anxious, indeed, have the members of this school been to extend the means of a provincial education, that they made some time ago arrangements for the formation of a college in Manchester, and convened a meeting of their townsmen to co-operate in the undertaking. Difficulties to which I shall not now advert, have, however, arisen to occasion delay. But the project has not been relinquished.

The advantages of a college in Manchester would be too numerous for me to specify. Suffice it to say, that a college would be not only of the greatest importance in respect to the liberal education of the medical student, but it would, at the same time, afford to gentlemen of other professions, and the public in general, a source of instruction for which they are now obliged to resort at a distance. It would raise the character of the town. It would supply the greatest desideratum. It would be worthy of an enlightened, a wealthy and an influential population. It would be the noblest legacy to the rising generation. The intellectual light which it would soon emit, would not only shed its splendour over the community, but be seen reflected by all our other institutions.

The miserable and mischievous cry against the dissection of the human body, which was some time ago so loud and general, seems now to have “died into an echo.” It will ever be disgraceful in an enlightened community. Haller, who extended so greatly the knowledge of the human body, was obliged to fly from Paris for his life, because he resorted to the only means by which such knowledge was to be acquired. Fortunately the danger has, in our own day, diminished;

the evil prejudice is on the wane, and, it is to be hoped, hastening to its extinction. Bentham, and several other distinguished men, were not only devoted to the improvement of their species by their studies, but they nobly left their bodies to be dissected for the benefit not only of their immediate survivors, but of future generations. What is there repulsive in the knife of the surgeon applied to the body deprived of the vital principle ? Is it not infinitely more agreeable in prospect, than the ordinary process of putrefaction, which produces the slimy worm to revel in the most disgusting and loathsome enjoyment ? One mode of disposing of the body elicits valuable information. It makes the dead a benefit, and a blessing to the living. It gives skill to the hand of the surgeon in the most painful and dangerous operations. It enables him to trace the source of disease, and thus to verify or correct, his judgment of the complaint from the symptoms which he had observed. In the most critical and important cases it is his only guide. The position of the medical man is extremely hard and singular. He is condemned and punished for his ignorance, while he is prohibited from resorting to the only source of genuine knowledge.

When the withering feeling of artificial prejudice has been overcome, the dissection of the human body is not only very instructive but highly interesting. It presents to the view a most perfect and complicated piece of machinery. All the parts are admirably framed for their respective purposes. They present the finest models for artificial contrivances. All that is just in proportion, elegant in arrangement, or beau-

tiful in structure, are displayed in the most imposing manner. From the investigation of Nature it would be impossible to trace, in any object more conspicuous and decisive manifestations than the human body exhibits, of creative power, design, contrivance and adaptation.

The conduct of the student often determines the fate of the medical practitioner. The reputation of the one may make or mar that of the other. The early dawn affords symptoms by which we judge of the character of the approaching day. Habitual and yet dignified courtesy ; honourable feelings and moral rectitude ; sentiments of independence, without the ostentatious and offensive display of them ; generous sympathy and the air to inspire confidence ; these qualities combined, render the pupil admired and respected, and the well-educated medical man eminently successful. For the want of them, no talents can compensate. Profound erudition and consummate skill may be insufferably repulsive, when unconnected with “the unbought grace of life” which would adorn and recommend them. Habits formed in early life, determine in most cases the prosperity or failure of the individual. The reputation of a medical man, like that of a female, once lost can never be recovered. It must be above suspicion. To sacrifice it in a single instance, and at any period of life, is a suicidal act, fatal and irrevocable.

“A man’s nature,” says a celebrated writer, “runs either to herbs or weeds ; therefore let him seasonably water the one, and destroy the other.” The cultivation of the higher faculties of the mind,

and the extinction of unworthy tendencies, cannot be commenced too early or persevered in with too much determination.

Nothing great can be achieved without regular study and continuous diligence. The hare, notwithstanding its speed, was, by slumbering on the way, beaten in the race by the slow yet persevering tortoise. Industry, which is essential to great success, will ensure, even to very ordinary talents, considerable proficiency. It is the stimulant of all our faculties ; and, when it become habitual, it is the principal source of distinction.

The eloquent Dr. Isaac Barrow has admirably observed, that “it is with us as with other things in nature, which, by motion, are preserved in their native purity and perfection, in their sweetness, in their lustre ; rest corrupting, debasing and defiling them. If the water runneth, it holdeth clear, sweet and fresh ; but stagnation turneth it into a noisome puddle : if the air be fanned by winds, it is pure and wholesome ; but from being shut up, it groweth thick and putrid : if metals be employed, they abide smooth and splendid ; but lay them up, and they contract rust : if the earth be belaboured with culture, it yieldeth corn ; but by lying neglected, it will be overgrown with brakes and thistles ; and the better its soil is, the ranker weeds it will produce : all nature is upheld in its being, order and state, by constant agitation ; every creature is incessantly employed in action conformable to its designed end and use : in like manner the preservation and improvement of our faculties depend on their constant exercise.”

Let me warn you against a prevalent error. Great readers are not necessarily men of much information ; and, indeed, too varied and extensive reading, especially if pursued indiscriminately, may paralyze some of the higher faculties of the mind. It is by reflection that what we read is converted into actual knowledge. As by overloading the stomach we impair the power of digestion, so by overloading the mind we are apt to render it inert. The advice of Cicero is, on this subject, worthy of your adoption : “read much, but not many books.” The greatest men that the world has produced read comparatively little. Of the number I may enumerate, Des Cartes, Pascal, Newton, John Hunter, Hobbs, Dalton. They had an object to attain before they referred to the writings of others. This practice supplied the requisite knowledge, and left them leisure for contemplation.

I have mentioned Hobbs, the philosopher of Malmesbury, as one of those who, though they have attained the highest fame, were remarkable for having read but little. We are told that a young man, who had perused all the popular publications of the day, got into the company of Hobbs and wished to stand high in his estimation by a display of more than ordinary erudition. He asked the philosopher if he had seen a number of works, the titles of which were enumerated in successive interrogatories. To each enquiry a negative was returned ; until Hobbs, out of patience with this obtrusive exhibition of useless learning, said, as he looked sternly upon the persevering questioner, “young man, you seem to have read much, and thought little ; I have read very little and

thought very much." The young man was one of those who are plentifully sprinkled in general society ; while Hobbs was of that very small class of individuals of which the world rarely presents, at distant times and places, a solitary example for the rest of the species, conscious of their inferiority, to regard with mingled feelings of astonishment and admiration.

Illustrative of this subject I shall borrow an example from the historical writings of Lord Bolingbroke, a work recommended for its eloquence, by Chatham, by Chesterfield and by Brougham. He describes an individual who "joined to a more than athletic strength of body, a prodigious memory, and to both a prodigious industry. He read almost constantly twelve or fourteen hours a day, for five-and-twenty or thirty years ; and had heaped together as much learning as could be crowded into an head. In the course of my acquaintance with him, I consulted him once or twice, not oftener ; for I found this mass of learning of as little use to me as to the owner. The man was communicative enough, but nothing was distinct in his mind. How could it be otherwise ? he had never spared time to think ; all was employed in reading."* Milton has justly characterized such a student as "deep versed in books, and shallow in himself :" and Shakspeare, impressed with the same sentiment, has emphatically observed :

" Small have continual plodders ever won,
Save base authority from others' books.

Honourable emulation is an enobling emotion. It stimulates industry, and quickens all our faculties.

* Of the Study of History.

It always obtains its reward. In this school it has, I think, been cultivated in its purity. The examinations by the lecturers on the different branches of your profession, and the exercises of the students' associations induce a comparison as to relative progress and shew the value of assiduity. By measuring our own capabilities with those of others, we perceive our power or deficiency. "He that wrestles with us" says a writer of the highest eloquence and experience, "strengthens our nerves, and sharpens our skill. Our antagonist is our helper. This amicable conflict with difficulty obliges us to an intimate acquaintance with our object and compels us to consider it in all its relations. It will not suffer us to be superficial."

The most permanent glory which can be acquired is that which results from the exercise of the intellect. Accident or favourable circumstances may create the military hero ; but his achievements, purchased by sufferings and desolation, are, at the best, but transitory : for the territory won at one time, may be lost at another. Greece, once the proud scene of warlike glory and devoted patriotism, yielded at last to the domination of Turkish barbarity ; and the "fatherland" of Kosciusko now withers under the tyranny of the Czar. But the conquests of the mind are indestructible. They pervade the civilized world. The glory of Newton and Dalton will increase with the lapse of time : while their discoveries add to the comforts of society by their practical applications, they elevate human nature in the scale of creation, enabling man to take under his cognizance the laws by which matter has been, by Divine Power and intelligence, reduced to form and moulded into beauty.

Moral fortitude, mingled with a dignified courtesy, is absolutely indispensable to the attainment of distinguished eminence. Every man, in pursuit of an honourable object, must be prepared to meet with obstructions. Envy will malign, and influence try to depress him. “Censure,” says a great authority, “is the tax which a man pays to the world for being eminent.” He who is dismayed by condemnation which he has not merited, must shun the career of laudable ambition. He is physically unfitted for the undertaking.

“Folly loves the martyrdom of fame.” In every society there are men who will, without any creditable pretext, go out of their way, wantonly, to check rising merit. Though the success cannot affect them; though it never crosses their path, yet they cannot endure it. They have the feelings of Haman when all availed him nothing, so long as he saw Mordecai sitting at the king’s gate. Such men are ever ready to disparage what they cannot emulate. To the meanest artifices, they are willing to resort. Salustius gained friends by vilifying Milton. Shadwell and Elkana Settle, were actively patronized to depress Dryden. Dennis had support, from those who despised him, because he shewed his malignity against Pope. I need not ask you whether you could not find similar examples in your own profession. How great soever your talents and attainments, and almost in proportion to them, will be the petty malice and pitiful attempts of those, who, if they knew their own interest, would aid you in your progress, instead of setting up, to your prejudice, some subservient and shallow pretender. When

Athens was tottering to her fall ; when talent was permitted to languish in obscurity ; in the very year before the invasion of Phillip, patronage was withheld from real worth, and the highest honours, for which heroes had bled in the field and philosophers taught in the academy, were lavished upon two young men whose only claims rested upon the fact that their father was the best cook in the commonwealth.

Nothing can be more true than that no man is born to be a prophet in his own country. On the contrary his greatest achievements will be misrepresented. If he overcome the many natural obstacles which obstruct his progress, his rise will be the more difficult among those who have witnessed it in its progress.

The superficial and presumptuous, especially if they come from a distance, will, in any department of science, literature, or the arts, be cherished and promoted, while native genius will be left to perish in neglect, or be pressed down by the machinations of officious and arrogant stupidity. It was thus in the case of the Author of our religion. It will be ever thus in the case of those, how great soever may be their merits, who seek to elevate themselves in any honourable pursuit. Dalton was, for many years, after the publication of his greatest discoveries, a comparatively disregarded unit of our population. During that very time his fame had spread over every part of the civilized world. It was not his genius ; it was not his invaluable contributions to the improvement of the arts, and the ascendancy of the nation ; but it was the patronage of royalty which acquired

for him general consideration and a statue in the town which has been, for so long a period, benefitted and dignified by his residence.

The man who makes a single step in the progress of human knowledge is sure to meet with painful and unworthy opposition. On this account Newton long withheld the publication of some of his most important discoveries. His principles of science, supported as they were by demonstration, were, at first repulsed by our universities, and at last smuggled into Cambridge in the shape of notes to the popular text book. Bacon's immortal work was disregarded by his contemporaries, and left by its author as a legacy to posterity. Pascal "that prodigy of parts" felt so acutely this fatality of genius, that he published anonymously even his mathematical discoveries. Aristotle, Des Cartes, Locke, and Priestley were obliged to seek, in a foreign land, an asylum from persecution. Harvey no sooner promulgated his discovery of the circulation of the blood, than he excited so much hostility, as to be deprived, by public and private scandal, of a great part of his professional practice. Sydenham, on the discovery of a valuable and now almost universal treatment of fever, was persecuted and threatened with assassination. To well-earned fame, and laudable exertions Socrates fell a martyr in the most enlightened city of the world.

Almost every splendid discovery, in the annals of science, has been either directly opposed or covertly disparaged. We recur now for mere amusement to the ridicule with which the ignorant and the envious assailed the first publication of the New System of

Chemical Philosophy. We are astonished, while we lament, that Davy should, in an evil hour, have descended from his eagle flight, and have associated with the wasps of the time, to annoy and injure the author. It seems to be the fatality of human nature that, how great soever may be a man's powers of mind, and how successful soever his undertakings, there must still cling to his very constitution some of those defects which betray the weakness of humanity. The last resource of malignity, when the completion of a discovery is no longer questionable, is to refer to mere fortuitous accidents that which was the result of active intellect. "But the mixture of chance in this pursuit," says Sir John Leslie, "should not detract from the real merit of the invention. Such occurrences would pass unheeded by the bulk of men; and it is the eye of genius alone that can seize every casual glimpse, and discern the chain of consequences."

I mention these circumstances not to excite unreasonable presumption, but to guard you, on your entrance into public life, against an enervating despondency. Without perseverance the most brilliant talents are sure to be unproductive. With determination there are few things which you may not attain. "Nothing," says Sir Humphrey Davy "is impossible to labour, aided by ingenuity." Illiberal opposition may, for a time, accomplish its object; but, in the present day, patience, perseverance and good conduct, will, ultimately, produce, in the worst cases, a reaction in your favour. In intellectual energy there is an elastic power, which the pressure of hostility will tend to augment. The camomile grows more luxuriantly,

and spreads its roots far more extensively, by being trodden upon. Reputation too easily acquired is often transient ; “ it swells like the Solway, but ebbs like its tide.” Whatever may be your position rather confer credit upon it by your assiduity, than suffer it to confer credit upon you, by the rank to which it elevates. Rank is only a reproach to him who is unworthy of it.

I cannot impress upon you, too strongly, the necessity of regular attendance upon all the lectures to which you enter. In each course their is a continuity of the subject : if a link be broken, the chain is imperfect. One part throws light upon another. Regularity in any pursuit is, indeed, one of the greatest sources of success. Omissions apparently the most trifling are sometimes the occasion of results the most important. The destiny of nations has sometimes been referred to ultimate causes of apparently the most insignificant character ; and human reason cannot predicate from an isolated fact, event or circumstance, the results which may be, at a future time, derived from its operation.

I have already intimated to you that our School has obtained a high reputation for the proficiency of the students after they have completed their education. Let it be your ambition to augment that reputation, and establish your own. Above all things take care that in your persons it do not suffer. In such a case your disgrace would be conspicuous. While you combine regularity with diligence you will be sure to succeed ; and you may feel confident, that you will not only be respected by each of your teachers, but

that all of them will co-operate to facilitate your progress, and, to the best of their ability, assist you in obtaining your merited reward. Remember that there are no honours more precious than those which have been obtained with difficulty ; and that there is no difficulty which may not be overcome by determined and continued perseverance.

In this way principally must we explain “the wonderful difference in the nature of men, between those who are insignificant in their powers, and apparently isolated in their influences, who live only whilst they move, and cease to act as soon as they cease to exist ; and those whose agency extends over the whole social world, who are full of energy in life, and leave behind them monuments of thought capable of perpetuating their existence.”—DAVY.

Gentlemen, you have selected a laborious, an anxious, yet a dignified and an ennobling profession. It will be your object and duty to apply all the resources of art to the best of all possible purposes ; to restore to ease and vigour the body subjected to a painful affliction or a lingering malady ; and, in still more impressive and affecting cases, even “ minister to a mind diseased.” Health is the greatest of human blessings ; for the want of it nothing can atone ; and the person who is the instrument in the hands of Providence in imparting it to those who suffer, not only ensures the most lively gratitude, but feels in himself a benevolent gratification which no other pursuit can, in the same degree, by possibility afford.

ERRATUM.

Page 18, Eighteenth line from the top instead of "heart" read "*art.*"

